What is claimed is:

1. A method for controlling pressure in a hydraulic system that includes an engine, a pump driven by the engine for supplying fluid to a hydraulic rail, first and second pump-motors supplied with fluid through the rail for driving a load, a main accumulator connected to the rail and containing fluid at a first pressure, a power mode accumulator connected to the rail and containing fluid at a second pressure greater than the first pressure, comprising the steps of:

monitoring a demand for an increase in a target parameter of the system;

closing communication between the main accumulator and the rail after the demand occurs and before the target parameter is produced;

adjusting a rate of fluid flow supplied by the pump to the rail such that a combination of pressure in the rail and a rate of fluid flow to the pump-motors produces the target parameter; and.

opening communication between the power mode accumulator and the rail;

2. The method of claim 1, wherein the step of adjusting a rate of fluid flow further comprises the steps of:

determining, based at least in part on a flow rate of the pump-motors, displacement of the pump, and pressure in the rail, a flow rate of the pump that would produce the target parameter; and

changing an engine parameter to increase the flow rate of the pump that would produce the target parameter.

3. The method of claim 1, wherein the step of adjusting a rate of fluid flow further comprises the steps of:

determining a combination of a flow rate of the pump-motors, a displacement of the pump, a pressure in the rail, and a flow rate of the pump that would produce the target parameter; and

increasing flow rate of the pump to produce the target parameter in combination with the determined flow rate of the pump-motors, displacement of the pump, and pressure in the rail.

4. The method of claim 1, wherein the step of adjusting a rate of fluid flow further comprises the steps of:

determining a combination of a flow rate of the pump-motors, a displacement of the pump, a pressure in the rail, and a speed of the engine and pump that would produce the target parameter; and

increasing the speed of the engine and pump to produce the target parameter in combination with the determined flow rate of the pump-motors, displacement of the pump, pressure in the rail.

5. The method of claim 1, further comprising the step of:

closing communication between the power mode accumulator and the rail when the target parameter is produced; and

opening communication between the main accumulator and the rail after the target parameter is produced.

6. The method of claim 1, further comprising the step of:

closing communication between the power mode accumulator and the rail allowing pressure in the power mode accumulator to fall below a predetermined pressure; and

opening communication between the main accumulator and the rail after pressure in the rail falls to the pressure of the main accumulator.

7. The method of claim 1, wherein the system further includes an accelerator pedal, and the step of monitoring a demand for an increase in a target

parameter further comprises the step of monitoring a change in the position of the accelerator pedal.

8. The method of claim 1, further comprising the steps of:

monitoring the magnitude of energy stored in the main accumulator [based at least in part on the pressure in the main accumulator];

opening communication between the main accumulator and the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than a predetermine magnitude; and

closing communication between main accumulator and the second pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude.

9. The method of claim 1, further comprising the steps of:

monitoring the magnitude of energy stored in the main accumulator;

opening communication between the main accumulator and the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than a predetermine magnitude;

closing communication between main accumulator and the second pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude; and

closing the supply of fluid from the pump to the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude.

10. The method of claim 1 wherein the target parameter is torque produced by the motor-pumps.

11. A system for transmitting power to the wheels of a vehicle comprising:

an engine-pump for producing a fluid flow;

a hydraulic rail having a pressure and connecting the fluid flow from pump to the pump-motor;

a first pump-motor supplied with fluid through the rail for driving a first set of wheels;

a first accumulator containing fluid at a first pressure;

a second accumulator containing fluid at a second pressure greater than the first pressure; and

a device for indicating a demanded operating parameter of the system;

a first control valve for opening and closing a hydraulic connection between the first accumulator and the rail;

a second control valve for opening and closing a hydraulic connection between the second accumulator and the rail;

a controller determining a demand for a target parameter of the system, opening communication between the second accumulator and the rail, closing communication between the first accumulator and the rail after the demand occurs and before the target parameter is produced, and adjusting a rate of fluid flow supplied by the pump to the rail such that a combination of pressure in the rail and a rate of fluid flow to the pump-motors produces the target parameter.

12. The system of claim 11, wherein the controller further comprises:

determining, based at least in part on a flow rate of the pump-motors, displacement of the pump, and pressure in the rail, a flow rate of the pump that would produce the target parameter; and

changing an engine parameter to increase the flow rate of the pump that would produce the target parameter.

13. The system of claim 11, wherein the controller further comprises:

determining a combination of a flow rate of the pump-motors, a displacement of the pump, a pressure in the rail, and a flow rate of the pump that would produce the target parameter; and

increasing flow rate of the pump to produce the target parameter in combination with the determined flow rate of the pump-motors, displacement of the pump, and pressure in the rail.

14. The system of claim 11, wherein the controller further comprises:

determining a combination of a flow rate of the pump-motors, a displacement of the pump, a pressure in the rail, and a speed of the engine and pump that would produce the target parameter; and

increasing the speed of the engine and pump to produce the target parameter in combination with the determined flow rate of the pump-motors, displacement of the pump, pressure in the rail.

15. The system of claim 1, wherein the controller further comprises:

closing communication between the power mode accumulator and the rail when the target parameter is produced; and

opening communication between the main accumulator and the rail after the target parameter is produced.

16. The system of claim 11, wherein the system further comprises a splitting valve disposed on the rail between the first accumulator and the second accumulator for opening and closing a hydraulic connection between the first accumulator and the second accumulator, the controller further comprises:

monitoring the magnitude of energy stored in the main accumulator based at least in part on the pressure in the main accumulator;

operating the splitting valve to open communication between the main accumulator and the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than a predetermine magnitude; and

operating the splitting valve to close communication between main accumulator and the second pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude.

17. The method of claim 11, wherein the system further comprises a splitting valve disposed on the rail between the first accumulator and the second accumulator for opening and closing a hydraulic connection between the first accumulator and the second accumulator, the controller further comprises:

monitoring the magnitude of energy stored in the main accumulator;

operating the splitting valve to open communication between the main accumulator and the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than a predetermine magnitude;

operating the splitting valve to close communication between main accumulator and the second pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude; and

operating the splitting valve to close the supply of fluid from the pump to the first pump-motor if the magnitude of energy stored in the main accumulator is equal to or greater than the predetermine magnitude.

18. A system for transmitting power to the wheels of a vehicle comprising:

an engine-pump for producing a fluid flow;

a hydraulic rail having a pressure and connecting the fluid flow from pump to the pump-motor;

a first pump-motor supplied with fluid through the rail for driving a first set of wheels;

a first accumulator containing fluid at a first pressure;

a second accumulator containing fluid at a second pressure greater than the first pressure;

a first control valve for opening and closing a hydraulic connection between the first accumulator and the rail;

a second control valve for opening and closing a hydraulic connection between the second accumulator and the rail; and

a splitting valve disposed on the rail between the first accumulator and the second accumulator for opening and closing a hydraulic connection between the first accumulator and the second accumulator.